Jane Davis, Chemistry

Year in School: Junior
Hometown: St. Louis, MO
Faculty Mentor: Dr. Paul Duval, Chemistry
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The effect of uranyl on a sulfur-bound amino acid

Uranium is one of the most radioactive naturally occurring elements known to man. What most people don't know is that it is also a chemical toxin. The most reactive uranium compound is uranyl [UO2]2+, in which uranium has a +6 oxidation state. We will be testing the reactivity of the uranyl compound with deprotonated cysteine, an amino acid. The uranyl compound we will use has two organic amide groups and two chlorine atoms attached uranium for a total of six bonds to the center. All amino acids have a carboxyl group and a nitrogen group. We will be using cysteine because it also has a thiol group that can be deprotonated. I believe that the oxygen from the carboxyl group will bind to the uranium center and replace the chlorine atoms, and am testing whether the sulfur will bind via the chelate effect by replacing the isopropyl amino groups. My analysis suggests that the oxygen did bind to the compound but that the sulfur did not. Further analysis needs to be conducted to determine the structure of the final compound. Further research for different amino acid structures also needs to be examined to get a better understanding of how uranium will react with amino acids in the body. One such amino acid to consider is serine, which has a similar structure as cysteine, with replacement of a nitrogen group instead of a thiol group.